The Effects of Various Capital Flows on Economic Growth of Developing Countries

by

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Abstract

This study investigates the effectiveness of various financial flows on economic growth of 79 developing countries all around the world based on a panel of data for the period 1989-2009. The study examines financial flows such as domestic capital sources, foreign direct investment, foreign loans, foreign aid and remittances as well as other growth determinants including exports, employment and education. It uses panel regressions to estimate the impacts of financial flows and other variables on the rate of economic growth for the overall sample of countries as well as regional sub-samples. The estimations were carried out with both *fixed* and *random* effect methods. It also estimates the same effects for sub-samples of countries according to income classification. The results for all the estimations are similar to a large extent. They indicate that among the capital flows, the most influential determinant of growth is domestic capital sources. Foreign capital flows are found to make no significant or meaningful contribution to economic growth. Among the other determinants of economic growth, the variable export is found to be consistently and positively related to economic growth.

Keywords: financial flows, capital, economic growth, foreign Flows, investment, developing countries

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Chapter 1

Introduction

"Science is the great antidote to the poison of enthusiasm and superstition."

Adam Smith,
The Wealth of Nations

Whatever the definitions of economic development are going to be, it is almost impossible to reach development without growth of capital (especially physical capital) and a rise in its productivity. Some economists have viewed capital as the core of the process of economic development (Waheed 2004). Moreover, if capital is considered as a means to develop new technologies, its accumulation is crucial. Capital can be defined either narrowly as machinery, factories and other sorts of physical capital or broadly as technology, know-how, economic infrastructure, human capital and so on. Capital plays a crucial role in the process of economic growth and development, and it is sometimes viewed as the most important determinant of economic growth in developing countries (Firebaugh, 1992, 125). Although high levels of investment would not necessarily lead to economic growth and high levels of income, some studies have found positive correlation between the ratio of investment (to output) and economic growth rate for countries within all income groups using cross section aggregate data (see Stern, 1989, p. 612, and Lynn, 2003, p. 72). However, the link between investment and growth is not quite clear (Lynn, 2003).

Domestic versus Foreign Capital

One of the basic principles in economics is that economic growth requires capital investment. Capital alongside two other factors (i.e. labor and land) compromise three basic factors of production that are traditionally assumed to have positive effects on output. Other factors being equal, the more capital, the more output. This implies that the quality and the source of capital does not matter.

In an ideal world of some economic theories in which the basic assumptions are valid[1], the source of capital is irrelevant. Yet, in the real world where there are structural barriers, ineffective and corrupt governments and so on, the source of capital could matter (Firebaugh, 1992).

The mobilization of domestic resources and their efficient management for productive investment is a crucial foundation to guarantee sustained development.

The Road Map of the implementation of the UN Millennium Declaration indicates that deploying of domestic resources is the basic requirement for self-sustaining development. The financial requirements for domestic investment and social programs can be met via domestic resources (Shende, 2002).

However, many developing countries have encountered a structural problem. The capital-deficient countries have to spend most of their incomes to meet their current and urgent needs and thus their national rate of saving tends to be low. Low saving confines required domestic investment, whether in physical or human capital. Similarly, it hinders the economy's productivity, national product and hereby national income. Subsequently, the low national income restricts future savings (Soubbotina and Sheram, 2000, xxiv). This closed loop is explained by the theory of vicious circle of poverty.

In addition, investment requires the mobilization of financial resources which is not easy in the absence or underdevelopment of financial intermediations and institutions which is common in developing countries (Lynn, 2003, 71). Well-functioning monetary and fiscal policies must be made in order to hold the levels of inflation rate, current account balance, taxes rate, deficit and public debt consistent with sustained growth;

[1] Assumptions such as capital and labor are completely mobile, political leaders are all wise and altruistic, class interests do not exist (Firebaugh, 1992, 106)

otherwise there will be neither enough domestic savings, nor high quality domestic investment (Shende, 2002).

Economists suggest that the capital-deficient countries can be released from the loop by many factors including foreign investment, particularly if such investment is accompanied by transfer of advanced technologies (Soubbotina and Sheram, 2000, xxiv).

Developing countries with limited access to domestic savings and export revenue seek their financial requirements from external sources. The financial resources can be obtained through various channels such as foreign investment (direct investment, private capital flows), borrowing from commercial banks, foreign aids, etc.

Since the end of World War II, foreign capital has significantly contributed to the process of economic development of many developing countries. However, the growth experience of some of these developing countries has not been satisfactory enough (Waheed, 2004, 2). This has led to controversial debates for and against foreign capital, as some theories of economics such as dependency theory (Boswell and Dixon, 1990) challenged the idea by arguing that some types of capital distort growth and development in developing countries (Firebaugh, 1992).

As Foreign Direct Investment (FDI) is the prominent type of foreign capital, we will discuss arguments regarding this source of capital in the following section.

Foreign Direct Investment

Foreign direct investment can be an effective factor in accomplishing economic development, filling the saving-investment gap, transferring technology and managerial knowledge, raising productivity and accessing international markets. However, there are many controversies about the impacts of FDI in developing countries. Todaro (2003, 643)

recognizes seven key debatable issues in this regard as follows: 1) International capital movements 2) Displacement of indigenous production 3) Extent of technology transfer 4) Appropriateness of technology transfer 5) Patterns of consumption 6) Social structure and stratification and 7) Income distribution and dualistic development.

The proponents of FDI argue that it accelerates host countries' growth by 1) increasing domestic savings and investment, 2) helping technology transfer from the developed countries 3) raising competition in the host country's domestic market, 4) increasing exports and earning foreign exchange, and 5) granting other types of positive externalities (spillovers) to the economy (Ram and Zhang, 2002).

De Mello (1997) argues that FDI contains a composite bundle of capital stocks, know-how, and technology, and thereby its impact on economic growth is expected to be manifold. Busse and Groizard (2006) explain several channels for FDI to influence economic growth. They argue that FDI provides new capital, allowing additional investment in both physical and human capital which is very beneficial for developing countries with capital restrictions. Moreover, FDI can be considered as a means to incorporate new knowledge from abroad and thus increase the productivity level. This knowledge inflow may benefit domestic businesses through imitation and learning, vertical linkages, increased competition in local markets and human capital mobility among firms. Wijeweera et al. (2007) state that FDI generates positive externalities through technology spillovers.

On the other hand, opponents believe that FDI may hinder economic growth through 1) repatriating funds almost to the same extent as it brings them in 2) transferring inappropriate technologies; 3) destroying domestic enterprise through intense competition

4) primarily targeting the domestic market and thus not increasing exports; 5) creating distortions in the host country's policies so as to benefit the foreign investors; and 6) causing distortions in the host country's social and economic structures (Ram and Zhang, 2002). Firebaugh (1992) also argue that foreign investors have less contribution to public revenue as they are often able to avoid taxes through "transfer pricing", and he believes it is more likely "linkage weak".

Besides, occupational choice models predict foreign direct investment would crowd out domestic enterprises and entrepreneurs through their selections in product and labor markets (De Backer and Sleuwaegen, 2003). Lall and Streeten (1977) argue that FDI (invested by Multinational Corporations "MNCs") may be detrimental to economic growth and development for at least three reasons. First, FDI may lead to a lower rate of capital accumulation domestically due to repatriation of a proportion of the profit. Second, FDI presence may lead to some adverse effects on development (for example, transfer pricing). Third, FDI may affect the market structure adversely, making it less competitive. (Moosa, 2002, p74)

There seems to be an inconsistency among opponents of FDI. Some critics of FDI, for instance, criticize FDI for targeting the domestic market and not increasing exports, while other critics believe FDI is mostly outward looking. "Not only does the profit flow outward, but the products often do as well" (Firebaugh, 1992, 107).

Todaro (2003, 638-644) argues the real controversy originates from different ideological and value judgments regarding the nature of economic development. According to him, the only reliable conclusion is that FDI can impact economic

development as long as the interests of MNC's and the host country's economic policies coincide.

FDI and Economic Growth Theories

Economic growth theories emphasize the increase in real per capita income and connect this increase to specific main factors including capital accumulation, population growth, technological progress and the discovery of new natural resources (Moosa, 2002).

Neoclassical growth theories assume developing countries are deficient in physical capital investment. Consequently, it is supposed that FDI inflows could only have a positive effect on the growth rate of poorer countries (Cypher and Dietz, 2009, 461). Capital formation, particularly in the neoclassical theories, is assumed to be the driving force of growth. Therefore, FDI by affecting levels of capital formation will be influencing economic growth (Moosa, 2002). However, according to De Mello (1997) in neoclassical growth models (the Solow model), the extent to which FDI affects output growth is limited. He argues, "… with diminishing returns to physical capital, FDI can only affect the level of income, leaving the long-run growth rate unchanged". Therefore, neoclassical growth models ignore potential impact of FDI on long run growth (De Mello, 1997). However, the absolute amount of capital formation provided by FDI, in regard to total investment in developing countries is likely to be small, approximately below 10 percent (Cypher and Dietz, 2009, 462). For example, as Cypher and Dietz argue, "On average new FDI amounted to less than 3 percent of total investment throughout the less-developed world in the period 1980–92" (2009, 461). "For the years 2003–5 the average levelof FDI expressed as a percentage of new capital formation

(machinery and equipment, residential and non-residential construction) was 10.9 percent" (2009, 461).

According to the endogenous growth theories, output is a function of the standard factors of production plus human capital (Wijeweera et. al., 2007). According to these theories the growth rate of a developing country depends on the extent of the adoption and implementation of new technologies that are already in use in developed countries (Moosa, 2002).Consequently, the rate of technological progress is the main determining factor of long-term economic growth.

It should also be noted that FDI does not impact economic growth on a direct relationship basis. A part of FDI flow is dedicated to mergers and acquisitions and it is invested in existing plants and equipment. Also according to the crowding out hypothesis, FDI inflows provided by MNCs lead domestic firms out of the market, due to lack of competitiveness, for instance. According to Ghose (2004), FDI has adverse effects on domestic businesses causing them to cut back on their investments. Moreover, it should be whether FDI is a complement to local investment or a substitute for it (Cypher and Dietz, 2009, 461).

One of the most important effects of FDI on economic growth is the externalities effect (spillover effects). This may take place as a result of technology and know-how transfer. This transfer can be accomplished either through backward linkages to domestic suppliers or through learning as domestic workforce, which can diffuse the new technology (Busse and Groizard, 2006). The empirical evidence on FDI technology spillover is far from conclusive, as some studies could find positive effects under some specific circumstances. For example, Görg and Hijzen (2004) discovered that imitation

and learning can be obtained when domestic firms are geographically close to multinationals and have enough absorptive capacity. Javorcik (2004) finds that spillovers may take place through backward linkages between multinationals and their local suppliers. Djankov and Hoekman (2000) emphasize human factors and state that they might act as an important channel to diffuse technology from multinational corporations to domestic firms either through labor turnover or the establishment of local businesses (Busse and Groizard, 2006).

Problem Statement

Financing of capital requirements for the process of economic development is one of the most important concerns of government officials and policy-makers, particularly in developing countries. Traditionally, capital has been viewed as the influential factor in the process of economic development. In the recent theories of economic development, capital still is considered as an important factor. Financial sources needed for economic development can be obtained from domestic (internal) sources or from foreign (external) sources. Many developing countries (particularly the low income nations) have encountered obstacles meeting their capital requirements from domestic sources. This is because levels of income in most developing countries are limited and they have to spend the greater part of their income to meet their current and urgent consumption needs. As a result, their national rate of savings tends to be quite low. Low savings restricts required domestic investment, whether in physical or human capital. Furthermore, they are generally suffering from the lack of well-organized and developed financial intermediations, institutions and systems (Lynn, 2003). Consequently, they have had to seek external sources of finance. Since the end of World War II, many developing

countries have been deploying different types of external capital to achieve rapid economic growth, which has resulted in different outcomes (Waheed 2004, 2).

The common thought among development economists regarding capital is that it is essential for growth per se, and its origin does not matter. Considering this belief, the capital-scarce countries mainly relied on foreign capital as the means of acquiring rapid economic growth. However, the growth experience of many of these countries has not been the same as what was expected (Waheed 2004,1).

Some of these sources of finance have helped developing countries achieve economic prosperity while other sources have caused difficulties for them. For example, as a result of the oil crisis in 1970s, many developing countries, mostly in Latin America, encountered a trade deficit, so they decided to finance the deficit through borrowing from foreign sources that eventually led them to accumulate a large external debt and made them fall into debt crisis (Cypher and Dietz, 2009, 531).

Each financial source of development has its own advantages and disadvantages as well as proponents and opponents. Economists have made a lot of arguments to support or refuse the necessity of each of the financial sources of economic growth and development. For example, there have been underlying controversies as to the effectiveness of foreign aid on economic development. Proponents of foreign aid argue that this type of capital flow is necessary for developing countries (Chenery and Strout 1966; Papenek 1973; Levy 1987; Islam 1992; Fayissa and El-Kaissy 1999). Yet, opponents of foreign aid argue that it may cause negative effects on domestic savings and economic growth (through, for example, crowding out, corruption, rent seeking activities and civil wars) in less developed countries (Bezuidenhout, 2009). Notwithstanding this

debate, foreign aid to developing countries declined by one-third in real terms in the 1990s (Fayissa and Nsiah, 2008), whereas other financial flows (e.g. foreign direct investment (FDI)) reached unprecedented records increasing from $35.7 billion in 1991 to approximately $237 billion in 2005 (Cypher and Dietz, 2009, 463). In fact, before the 1990s, FDI mostly was viewed as part of the problem in developing countries. For example, according to economic dependency theory, FDI was assumed to have negative effects on domestic growth. (see, Boswell and Dixon 1990, p. 554). In recent decades, it has been increasingly viewed as part of the solution (UNCTAD, 1999).

The impacts of foreign capital on the economic growth of developing countries are controversial. While considerable empirical studies on the effect of foreign capital have concentrated on FDI and foreign aid flows, other types of capital flows and their impacts on economic growth and development generally have been neglected (Baharumshah and Thanoon, 2006). The consideration of all various types of financing and their relative contributions to economic growth will give policy-makers valuable insights for making policies that would enhance the overall productivity of economy.

Therefore, there is a gap in the literature regarding a comprehensive comparative study of various sources of capital financing in terms of their potential contribution to the overall growth of the economy. To get a sense of the relative magnitudes of various foreign flows, Table 1-1 shows the amount of various flows for selected years between 1991 and 2005.

The flow of foreign capitals has changed over the past years. Among the foreign flows, the FDI and Foreign Portfolio Investment (FPI) have dramatically increased, whereas Loans had some fluctuations and Official Aid flows have gradually decreased.

Table 1-1. Net long-term capital flows into developing regions (billions of US$)						
Type of Flow	**1991**	**1997**	**1999**	**2001**	**2003**	**2005**
FDI	35.7	168.7	183.3	176.9	161.6	237.5
Portfolio investment	21.5	71.7	41.7	11.1	45.7	116.4
Bank loans	5.0	44.0	-7.1	-10.8	9.8	67.4
Official flows	62.6	34.9	40.2	35.8	29.0	22.3
Total	**124.2**	**319.3**	**258.1**	**213.0**	**246.1**	**443.6**
FDI/Total (%)	*28.7*	*52.8*	*71.0*	*83.1*	*65.7*	*53.5*
Portfolio investment /Total (%)	*17.3*	*22.5*	*16.2*	*5.2*	*18.6*	*26.2*
Bank loans /Total (%)	*4.0*	*13.8*	*-2.8*	*-5.1*	*4.0*	*15.2*
Official flows /Total (%)	*50.4*	*10.9*	*15.6*	*16.8*	*11.8*	*5.0*
Source: World Bank, Global Development Finance, 2002:3						
Reproduced from: Cypher and Dietz. (2009), p. 463						

The FDI flow into developing regions has risen from 35.7 billion dollars in 1991 to 237.5 in 2005. As a result, the share of FDI in the total net long-term flows into developing countries has increased from 28.7% in 1991 to 53.5% in 2005. This share reached an exceptional value of 83.1% in 2001. The share of private investment in in the total net long-term flows had some variation - maybe due to its higher sensitivity against economic crisis - as opposed to the FDI. Bank loans flows had also fluctuations. As it is clear from Table 1-1, the share of Official aids in total foreign flows had a large drop from 50 percent in 1991 to only 5 percent in 2005.

Research Objectives and Questions

In this study, I am going to examine the impacts of various types of financial sources of capital and compare them based on their impacts on economic growth using panel regressions for a large number of developing countries. Moreover, the study

attempts to detect any particular geographical (regional) or income-related patterns in capital financing among countries. The study considers the following questions:

1. Do all the sources of capital finance contribute to economic growth? If so,
2. Which ones are more influential than others? and
3. Is capital financing region specific or income-level specific?

Structure of the Study

The rest of the study is organized as follows. Chapter two reviews the empirical literature on capital financing for economic growth. Chapter three explains the data and methodology. The estimation results are presented and discussed in chapter four, and finally chapter five conclude the study.

Chapter 2

The Review of Empirical literature

"Whenever a theory appears to you as the only possible one, take this as a sign that you have neither understood the theory nor the problem which it was intended to solve."

Karl Popper

Objective Knowledge: An Evolutionary Approach

Introduction

In this chapter, I will provide an overview of empirical studies concentrating on the growth effect of various financial flows. Since there are a large number of empirical studies that have individually examined the effect of each specific financial flow on economic growth, we merely concentrate on the studies which have used different financial flows and disaggregated foreign capital flows into their components.

A large number of empirical studies with controversial findings are found in the literature. As Busse and Groizard (2006) argue in the case of FDI, the evidence found in the literature is rather mixed and no robust relationship between various financial sources and economic growth has been established.

A brief review of the empirical literature

The earlier studies have been mostly implemented in the neoclassical context through which an increase in capital and labor input explains output. However, they disaggregated capital into domestic and foreign capital inflow. They also broke down foreign capital into its components to identify the most influential resource and deployed other variables to capture country-specific aspects (Waheed 2004, 3).

Papanek (1973) conducts a cross-country study of 34 countries in the 1950s and 51 countries in the 1960s to examine the impacts of various types of financial flows (foreign aid, foreign private investment, all other foreign inflows and domestic savings) on economic growth. His study reveals that all types of foreign capital had positive effect on growth and all were statistically significant, though foreign aid had a substantially greater effect than others. He demonstrates that over a third of growth is explained by savings and foreign inflows. He also uses other variables including exports, education,

per capita income and country size, but none of them was statistically significant. (Papanek 1973). Papanek's study is one of the earliest that has been conducted in this field.

Stoneman (1975) criticizes Papanek's study for ignoring two main effects of foreign capital: the direct balance of payment effect and the structural effect. The former indicates that inflows of capital enable higher investment and consumption and the latter points out the structural changes that are caused by foreign capital such as exports reduction, change in capital output ratio, change in income distribution, etc. Then based on the OLS regression analyses for three five-year periods between 1955 to 1970 of a main sample of 188 countries and various sub-samples, he tests the impact of net inflow of direct investment, net inflow of foreign aid, other foreign long-term flows, gross domestic savings and the stock of foreign direct investment. He finds a favorable impact of foreign aid and domestic savings on growth, while the stock of foreign direct investment has adverse effects on growth (Stoneman, 1975).

Based upon the simple growth model and using pooled data of 10 countries for the period of 1960-73, Balassa (1978) find that labor inputs, foreign capital flows and domestic savings had positive relationships with growth. Gualti (1978) tries to avoid the bias of the previous studies that have all Least Developed Countries (LDCs) integrated into one homogenous group. He uses two categories for his study. 17 countries out of 38 LDCs were classified into "Model-I countries" that are countries faced with the lack of sufficient investment. It implicitly means that they could potentially benefit from capital flows best. The remaining 21 countries are classified as "Model-II countries", mostly from Africa and Latin America, which have cultural and social limitations other than

merely lack of investment funds. Using data from the 1960s, Gualti reports two different results. The impact of Foreign capital inflows and savings on growth are statistically significant in Model-I countries, while these variables are not able to explain growth in Model-II countries. He suggests that foreign capital is only beneficial for some specific developing countries.

In order to illuminate the relationships between foreign financial flows and economic growth and inequality, Bornschier et. al. (1978) conduct a comparative review of the previous cross-country empirical studies in this regard. They distinguish capital flows from capital stock and explain that flows of direct investment and foreign aid have short-term positive effects on growth, while stock of those sources of capital have cumulative, long-term negative effects on economic growth. Finally, they point out that the results are independent from geographical locations.

Using a sample of 83 countries over the period of 1969-77, Mosley (1980) runs a Two Stage Least Square (TSLS) regression estimation on a system of two equations. In the first equation, the explanatory variables consist of savings, foreign aid, other foreign capital inflows, and the dependent variable was GDP growth. In the second equation, foreign aid is a function of GDP per capita. Foreign aid and other foreign inflows have a negative effect on growth, though they are statistically insignificant in the case of all 83 sample countries. He also tests the model based on a sample of 30 poorest countries and finds foreign aid (with a lag of 5 years) significantly impacts growth.

Dowling and Hiemenz (1983) include policy variables into their study. They use a sample of 52 countries for the period of 1968-79 in order to estimate an OLS regression model with foreign aid, other capital inflows and savings as well as four policy variables.

They find that all three variables are significantly affecting growth in a positive way. They argue that the economic policies pave the way for a productive allocation of foreign aid and other resources. Among these policies, liberal trade and financial policies enhance the overall growth performance.

Gupta and Islam (1983) categorize their dataset of 52 countries for the period of the 1970s into three income groups and three geographical groups. They estimate a nine-equation simultaneous model by the OLS method[2]. They find that both savings and foreign capital significantly enhance growth, though the effect of savings is more important. They also disaggregate foreign capital into foreign aid and foreign private investment. Although foreign aid is slightly more influential on growth than is foreign private investment, foreign private investment has less adverse effect on domestic savings than foreign aid.

Rana and Dowling (1988) investigate the impact of foreign capital on the economic growth of a sample of nine Asian countries. They choose foreign private investment, foreign aid, domestic saving, export, labor force and GDP per capita as their explanatory variables. Their findings show that while FDI contribute to growth both by augmenting capital formation and by improving investment efficiency, foreign aid contribute only by raising capital formation. They state foreign aid may reduce investment efficiency. They also find that export, growth of labor force and domestic saving rate act as pro-growth variables.

Glenn Firebaugh (1992) compares the growth effects of foreign investment as opposed to domestic capital in a sample of 76 Least Developed Countries and he

[2] They also used TSLS method, but since TSLS estimates for the two groupings were not satisfactory enough according to conventional statistical criteria, they provided merely OLS estimates.

concludes foreign investment spurs economic growth over the long run as well as over the short run. He states that "From the host country's perspective, all capital is not equal; the source does matter. Homegrown capital outperforms imported capital" (Firebaugh 1992, 124). In addition, the author recognizes some methodological implications via the previous studies that have found harmful "long-run" effects of foreign investment.

Most and Van den Berg (1996) examine the relationship between economic growth and three sources of investment (foreign aid, foreign direct investment and domestic saving) for 11 Sub-Saharan African countries. They suggest that although domestic saving seems to have slightly more positive impact on economic growth, the mixture of results across 11 countries implies that it is impossible to mark one source of financing as the most effective source. Dutt (1997) also falls short of detecting any empirical relationship between foreign investment and per capita growth rates

Using a sample of 58 developing countries of Asia, Africa and Latin America from 1978 to 1995, Bosworth and Collins (1999) carries out a comprehensive study investigating the effect of financial flows on *investment* by types of financial flows. It finds that a one-dollar increase in capital inflow (of all types) is associated with a fifty cent increase in domestic investment, while FDI has a one-to-one dollar effect in domestic investment.

In their study, Reisen and Soto (2001), examines the growth impact of various foreign financial flows (foreign direct investment, portfolio equity investment, bond flows, as well as short-term and long-term bank lending) in the recipient emerging markets through a Generalized Method of Moments (GMM) panel data analysis of 44 countries around the world over the period 1986–97; the findings indicate that FDI and

portfolio equity flows have a significant positive impact on growth, while both short-term and long-term bank lending have a significantly negative effect on growth. Two other flows, portfolio bond flows and official flows, do not significantly influence growth.

Levine and Carkovic (2002) employs a Generalized Method of Moments (GMM) panel analysis covering a sample of pooled data from 72 countries in the period 1960–95 to examine the growth impacts of FDI. They find neither FDI nor portfolio inflows have significant growth impacts.

A research study of five developing Asian countries conducted by Trevino and Upadhyaya (2003) suggests significant positive impact of FDI on economic growth. In addition, the authors indicate that in case of open economies, FDI affects economic growth more effectively than foreign aid does.

Mody and Murshid (2005) conducts a study using a panel data of 60 countries spanning from 1979 to 1999. They examine the relationship between three main types of capital inflows (FDI, loans and portfolio flows) and domestic investment. Although the variable of economic growth has not been included in the study, some authors suggest that "a positive impact on investment implies a positive impact on growth." (Cline, 2010, 62). They highlight the strong impact of total foreign capital flows (aggregate data) on domestic investment. The coefficients, while all positive, are slightly different when three types of foreign flows are separately taken into account.

Gheeraert and Malek Mansour (2005) performs a structural econometric model on a cross-country data analysis including 45 emerging economies to test the growth impacts of capital flows (i.e. FDI, equity investment, debt investment and flows in financial

derivatives). The findings highlight a significant positive relationship between capital flows and economic growth. They also find that the effects of FDI are remarkably stronger than those of other types of capital flows.

A study based on a simultaneous-equation model conducted by Burke and Ahmadi-Esfahani (2006) finds no sufficient evidence to suggest a significant growth-effect of foreign aid in three South East Asian countries (Thailand, Indonesia and the Philippines) from 1970 to 2000. It is also found that export growth and FDI inflows have made considerable contributions to the economic growth.

Lensink and Morrissey (2006) estimates the standard model using cross-section, panel data, and instrumental variable techniques to measure the volatility of FDI inflow impacts on growth. They cannot find robust evidence of a positive effect of FDI levels on growth.

Baharumshah and Thanoon (2006) conduct a quantitative assessment in order to find the effects of various types of capital flow on growth in East Asian countries. They deploy four sources of financing as their independent variables: domestic savings, foreign direct investment (FDI), short-term debt and long-term debt. Based upon their findings, FDI influences economic growth more than other financing sources do. FDI enhances growth in the short and the long run. However, they explain that domestic savings has a positive impact on long-term economic growth. Their findings cannot find robust evidence that short-term debt and long-term debt contribute to long-term economic growth.

Bhandari et. al. (2007) carries out a fixed-effects model estimation including variables such as capital stock, foreign aid, foreign direct investment and the labor force

using the pooled annual time series data from 1993 to 2002 to investigate the effectiveness of foreign sources of capital in a number of East European countries. They find that stock of domestic capital and inflow of FDI positively contributes to economic growth, whereas there was no robust evidence that foreign aid has a significant effect on real GDP.

Fayissa and Nsiah (2008) investigate the effect of remittances, as opposed to the other external sources of capital such as FDI and foreign aid, on the economic growth of 37 African countries for the period of 1980 to 2004 using an unbalanced panel data. Their results represent that remittances positively impact the economic growth of African countries. However, their study does not show any significant evidence for FDI and foreign aids.

Ekanayake and Halkides (2008) examine the impacts of FDI and remittances on the economic growth of developing countries using panel data series, while accounting for regional differences in Asian, African, Latin American, and the Caribbean countries as well as the differences in income levels. Although the study has not included other foreign sources of capital, the findings exhibit that both FDI and remittances flows exert a positive impact on economic growth of developing countries.

As well, De Vita and Kyaw (2009), deploy a dynamic panel model on a sample of 126 developing countries for the period 1985 to 2002 to study the relationship between foreign capital flows (and portfolio investment flows) and economic growth. They classify the sample countries into three categories; low, lower middle and upper middle income countries. The findings suggest that absorptive capacity is a determining factor in pro-growth effects of foreign capitals. In other words, a minimum threshold of economic

development is required to take advantage of positive impacts of both forms of investment inflows on economic growth.

Brambila-Macias and Massa (2010) conduct a study containing a sample of 15 selected sub-Saharan African countries over the period 1980–2008 to measure the impacts of four various types of private capital inflows (cross-border bank lending, foreign direct investment (FDI), bonds flows and portfolio equity flows) on economic growth. Using the bias-corrected least-squares dummy variable (LSDV) estimator, they find that FDI and cross-border bank lending have a direct, positive and significant effect on growth, whereas there is no strong evidence that portfolio equity flows and bonds flows impact economic growth.

Using a sample of 51 countries (19 developed and 32 developing countries) from 1988 to 2002, Choong et. al. (2010) compares three types of private capital flows in terms of how they could enhance economic growth. They include the parameter of stock markets as a mediator factor through which foreign capital flows could impact economic growth. The results primarily reveal the positive impact of FDI, while two other capital flows (foreign debt and portfolio investment) negatively affect growth in all sample countries; whether developed or developing.

Summary of literature reviewed

Table 2-1 summarizes the studies which were reviewed above and categorizes them based on the level of disaggregation and their regional/global focuses.

Table 2-1. The classification of previous studies

Authors	Year	Period	Sample	Classification
The following studies use the aggregated foreign capital flows in a global sample				
Balassa	1978	1960-73	10	
Gualti	1978	1960s	17	(Model-II)
Gualti	1978	1960s	21	(Model-II)
Mosley	1980	1969-77	83	
Dowling and Hiemenz	1983	1968-79	52	
Gupta and Islam	1983	1970s	52	
Firebaugh	1992	1965-77	76	
The following studies focus on a specific region using disaggregated foreign capital flows				
Rana and Dowling	1988	1965-1982	9	East Asia
Most and Van den Berg	1996	1980s-1990s	11	Africa
Trevino and Upadhyaya	2003	1993 - 2002	5	East Asia
Burke and Ahmadi-Esfahani	2006	1970-2000	3	South East Asia
Baharumshah and Thanoon	2006	1982 - 2001	8	South East Asia
Bhandari	2007	1993-2002	6	East Europe
Fayissa and Nsiah	2008	1980 - 2004	37	Africa
Brambila-Macias and Massa	2010	1980 -2008	15	Africa
The following studies consider disaggregated foreign capital flows in a global sample				
Papanek	1973	1950s, 1960s	34, 51	
Stoneman	1975	1955-1970	188	
Bosworth and Collins	1999	1978-1995	58	
Reisen and Soto	2001	1986–97	44	
Levine and Carkovic	2002	1960–95	72	
Durham	2003	1977 - 2000	88	
Durham	2004	1979 - 1998	80	
Mody and Murshid	2005	1979 - 1999	60	
Gheeraert and Malek Mansour	2005	1980-2001	45	
Ekanayake and Halkides	2008	1980-2006	92	FDI and Remittances
De Vita and Kyaw	2009	1985 - 2002	126	
Choong	2010	1988 - 2002	51	

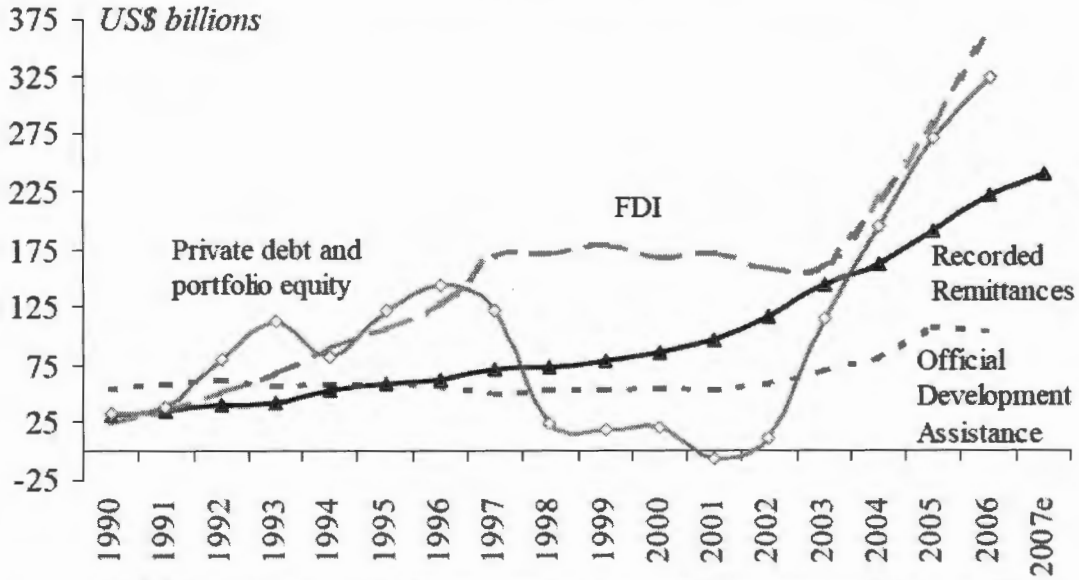
Contributions of this study

Although there are numerous studies concentrating on the relationship of various types of capital flows to developing countries and economic growth, there is still a gap in the literature which this study attempts to address it. Most of the earlier studies have been conducted through cross-country data and have not disaggregated foreign capital flows. Furthermore, they have deployed data prior to the 1990, while the combination of foreign capital flows has been dramatically changed during the last two decades (Table 1-1).

On the other hand, there seems to be a gap in addressing the relationships of various financial flows and economic growth with respect to specific geographical regions. Although there have been studies performed on samples from different regions, they vary in terms of methodologies, data specifications, periods of study, proxies and so on. As such, their results cannot be reliably compared. Moreover, the existing studies are mostly relying on data from the 2002 or before and apart from one or two studies, which focus on regional analysis, none have used data of the recent years.

The flows of Remittances as one of the main sources of foreign capital flows are also neglected in most of previous studies, while remittances is one of the major channels of capital flows in recent years. The trend of remittances is among fast-paced growing capital flows. (Figure 2-1)

Figure 2-1. Capital Flows to Developing Countries



Sources: *Global Economic Prospects 2006: Economic Implications of Remittances and Migration* (World Bank), *World Development Indicators 2007*, and *Global Development Finance 2007*.

Adopted from Ratha et al. (2007), p. 2

To my knowledge, a study investigating the relationship between various types of financial flows (domestic investment, FDI, foreign loans, foreign aids, remittances) and economic growth, considering the regional differences based on a homogenous set of data, is still missing in the literature. This study is an attempt to fill this gap.

Chapter 3

Methodology and Data

"In so far as a scientific statement speaks about reality, it must be falsifiable: and in so far as it is not falsifiable, it does not speak about reality."

Karl Popper

The Logic of Scientific Discovery

Model

As mentioned in chapter one, I intend to study the impacts of the selected types of capital financing source on economic growth of developing countries over the period of 1989-2009. To this end, I consider the following general panel regression model for all the countries included in the sample (called the overall model).

$$G_{it} = \alpha + X_{it} + Y_{it} + Z_i + \lambda_t + D_r + \varepsilon_{it}$$

where G_{it} denotes GDP growth rate of country i in year t; α is a constant term; X_{it} denotes a set of different sources of capital for country i in year t; Y_{it} represents a set of other determinants of economic growth for country i in year t; Z_i is a vector of country-specific variables (country effects); λ_t is a common time trend; D_r is a regional dummy variable; and ε_{it} represents the random error for country i in year t.

The sources of capital considered include Domestic Investment (DINV)[3]; Foreign Direct Investment (FDI); Foreign Debt or Foreign Loans (DEBT); Foreign Aid or Official Development Assistance (ODA); and Remittances by expatriates (REM).

Other determinants of growth considered are Exports (EXP); Employment to population ratio (EMP); and Secondary school enrollment ratio as a proxy for education or human capital (EDU)[4]

The sample of developing countries considered for this study consists of countries from various regions of the world. In order to capture any regional influence on economic growth, a regional binary dummy variable (D_r) has been incorporated in the overall model. The regions considered are: Eastern Europe (D_1), East and South East Asia (D_2),

[3] Savings can be used for domestic financial sources; however, since savings do not essentially lead to investment, Domestic Investment is a better candidate.

[4] I intended to use Research and Development expenditure (% of GDP) as another determinant of growth, but the available data was very limited.

South Asia (D_3), Middle East and North Africa (MENA) (D_4) , Sun-Saharan Africa (D_5), Latin America (D_6) and Former Soviet States (D_7)[5].

In anticipation of different regional patterns of economic growth, I also estimate region-specific models for each of the seven regions of the world determined in this study. These *regional models* (M1–M7) have the same specifications as the *overall model* (M), except that they exclude regional dummy variables.

Two alternative specifications of the models are considered. In the first specification, the variables (DINV, FDI, DEBT, ODA, REM) and EXP are entered as growth rates (Growth specifications). In the second specification, these variables are entered as annual changes scaled to GDP (Scaled changes specifications). In both specifications, employment ratio (EMP) and education (EDU) appear as annual absolute changes (unscaled). If the results from the two specifications turn out to be similar, the results of one specification will be reported and discussed.

Data

The longitudinal data for the 79 countries in the overall sample are taken from the World Development Indicators (WDI) database of the World Bank[6]. Table 3-1 shows the list of variables and the corresponding indicators obtained from the above mentioned World Bank database.

The initial sample included 103 developing countries from around the world for the period of 1989 to 2009. However, missing data for a number of variables limited the

[5] The list of countries in each of the seven regions is given in Appendix A.
[6] As mentioned in the World Bank Data Catalog "World Development Indicators (WDI) is the primary World Bank database for development data from officially-recognized international sources." http://data.worldbank.org/data-catalog

sample to 79 countries. The data panel formed out of this process was unbalanced as there were still some missing data for some countries in some years.

Table 3-1. Variables and Indicators

Abbreviation	*Variable*	*Indicator*
G_{it}	Economic Growth	GDP (current US$)
$DINV_{it}$	Domestic Investment	Gross fixed capital formation (current US$)
FDI_{it}	Foreign Direct Investment	Foreign direct investment, net inflows (BoP, current US$)
$DEBT_{it}$	Foreign Debt (Loans)	Changes in external debt stocks, long-term (DOD, current US$)
ODA_{it}	Official Development Assistance (Foreign Aid)	Net official development assistance and official aid received (current US$)
REM_{it}	Remittances	Workers' remittances and compensation of employees, received (current US$)
EXP_{it}	Export	Exports of goods and services (current US$)
EMP_{it}	Employment Ratio	Employment to population ratio, 15+, total (%)
EDU_{it}	Education	School enrollment, secondary (% gross)

To capture the dynamic effects of the explanatory variables on economic growth, lagged values of the explanatory variables were also incorporated in the models. Eviews was used as the statistical software to assist the analysis process and to perform estimations.

Panel data method

As mentioned earlier, I used the panel data estimation method. In panel data, each observational unit (or entity) is observed for a number of years (in this case 20 years). In

this type of data the effect of omitted variable (which might be varying across entities but staying constant over time) could be eliminated. In fact, the panel data set enable us to control for the effects of unobserved variables that differ from one entity (country) to another one. This effect could be a cultural factor, for instance, which differ from one country to another one, but do not vary over time. Panel data also provides the possibility of controlling for variables that change over time but stay constant across entities (Stock and Watson, 2011, 347).

By incorporating the inter-individual differences and intra-individual dynamics, panel data have several advantages compared to cross-sectional or time-series data. Among these advantages, Hsiao (2006) suggests the followings:

- Improving the efficiency of econometric estimates and therefore more accurate inference of model parameters (via more degrees of freedom and less multicollinearity than cross-sectional or time series data)
- Controlling for the effects of omitted variables
- Considering dynamic relationships
- Generating more accurate predictions for individual outcomes
- Providing micro foundations for aggregate data analysis
- Simplifying computation and statistical inference
- Analysis of nonstationary time series
- Reducing measurement errors

"Cross-sectional" effects as well as "time-period" effects can be accounted for within a panel data model. Cross-sectional effects capture country-specific effects,

whereas time-period effects capture time-specific effects. The effects, both cross-sectional and time-period could be either random or fixed.

Fixed effect regression uses panel data to control for unobserved variables which change across entities but do not vary over time. The fixed effect model uses a specific intercept for each entity. In the order words, it has *n* different intercept which are defined as a set of binary variables (Stock and Watson, 2011, 354). The binary variables capture the effects of omitted variables which are different across the entities.

In the random effect panel regressions, the country-specific effects (intercepts) are assumed to be random instead of being constant (fixed). Therefore, random variables are used instead of dummy variables.

While both cross-sectional and time-period effects can be considered in a balanced panel estimation, only one of the two effects can be examined in an unbalanced panel such as the one in this study. Following the convention, I focus on the cross-sectional effects. The following chapter reports the results for fixed and random (cross-sectional) models for the overall model (M) and regional models (M1-M7).

Chapter 4

Empirical Results

"There are many theories because each is based on different assumptions about the world; it is their relevance rather than their logic which is in dispute."

P. Lesley Cook

Effects of Mergers

Introduction

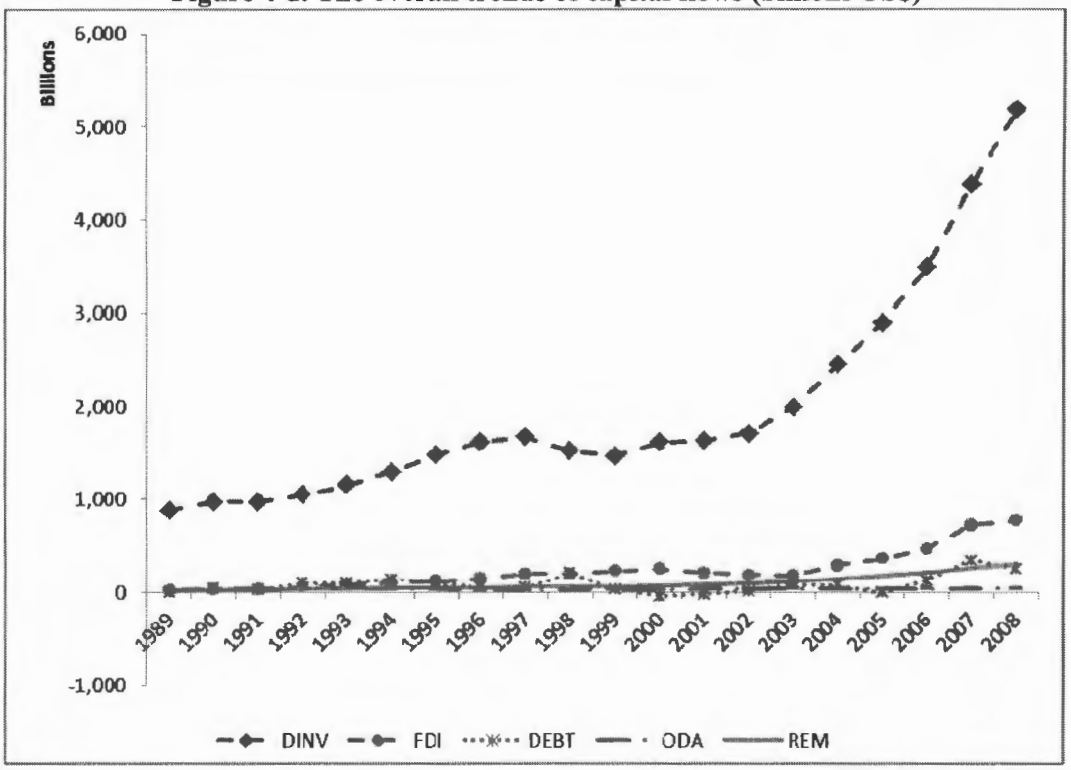
As discussed in chapter 3, I ran the estimations for selected types of model and data specifications. Among the various specifications, two were examined more thoroughly: the growth rate specification and the scaled changes specification. These specifications were more plausible in the light of the existing literature. However, the results from these specifications were similar, and therefore, in the following section I am going to report the results of the growth rate specification as it has a more straightforward interpretation. The growth rate specification is estimated for the overall (global) model (considering all countries in the sample) as well as for the regional models (considering the sample countries in any of the seven regions).

In order to give a general picture of the sample set and its attributes, selected countries and their specifications, I am going to begin this section with the analysis of descriptive data. This step enables us to review the trends over the selected period of time from 1989 to 2009.

Descriptive analysis

To get a sense of the relative magnitudes, Figure 4-1 shows the amounts of various capital flows over the period of 1989-200. As shown in Figure 4-1, the dominant capital flows are domestic sources. It is shown in this figure that domestic investment (DINV), a proxy for domestic sources, is certainly the dominant source of financing growth even though other financial sources show increasing trends in the 2000's. Given the fact that the current level of domestic sources (as well as its growth rate) is meaningfully higher than other sources, it can be inferred that the dominant status of this factor will be maintained for the following decades.

Figure 4-1. The overall trends of capital flows (billions US$)

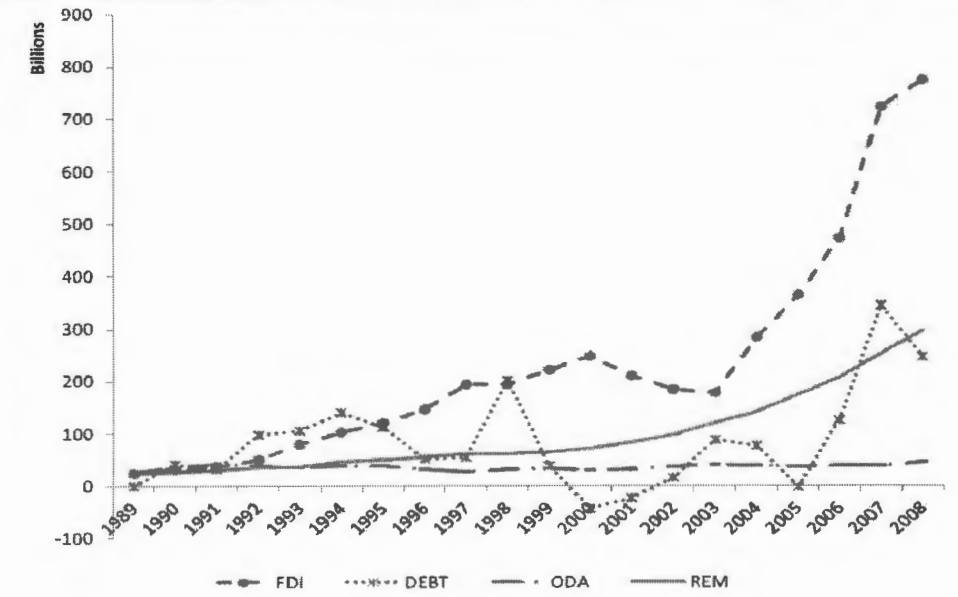


Due to the enormous volume of domestic sources, the trends of other capital flows are not clearly observable in Figure 4-1. Therefore, I exclude this factor (i.e. DINV) in order to have a better picture of external sources of capital. The modified graph is presented in Figure 4-2.

As Figure 4-2 illustrates, in the early 1990's the dominant external source was foreign loans (DEBT); however, it has been replaced by FDI in the 2000's. The trend of foreign loans has experienced numerous ups and downs. Other financial sources did not have the same fluctuations. FDI flows are increasingly ascending while remittances (REM) are growing in a steady trend. The official aids (ODA) have formed a small part of external capital flows, and has remained stagnant over the entire period. The evolution of external sources of capital for each of the seven regions of the world are provided in

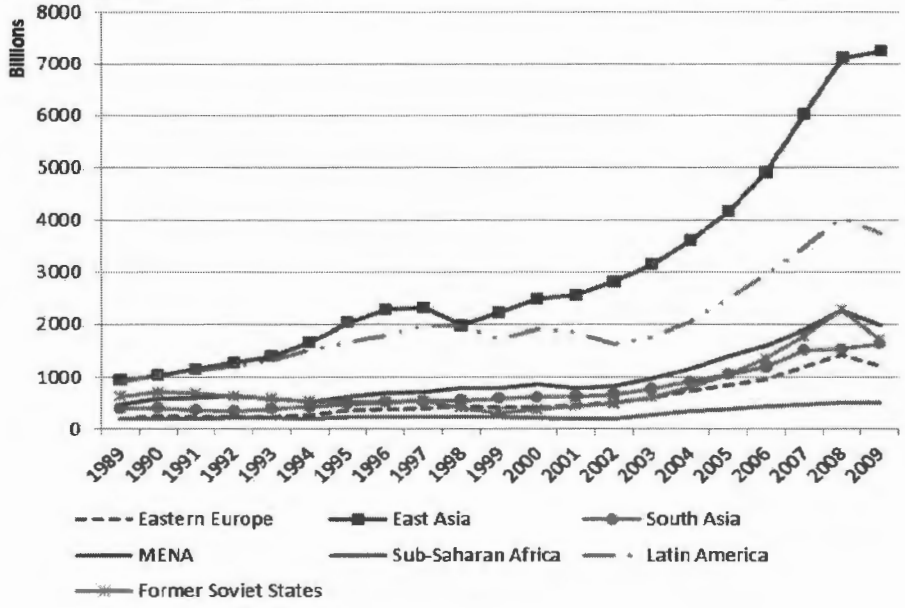
Appendix B. It should be noted such graphs do not show the total of capital flows for the entire region, but those of the countries in the sample from these regions.

Figure 4-2. The overall trends of external capital flows (billions US$)



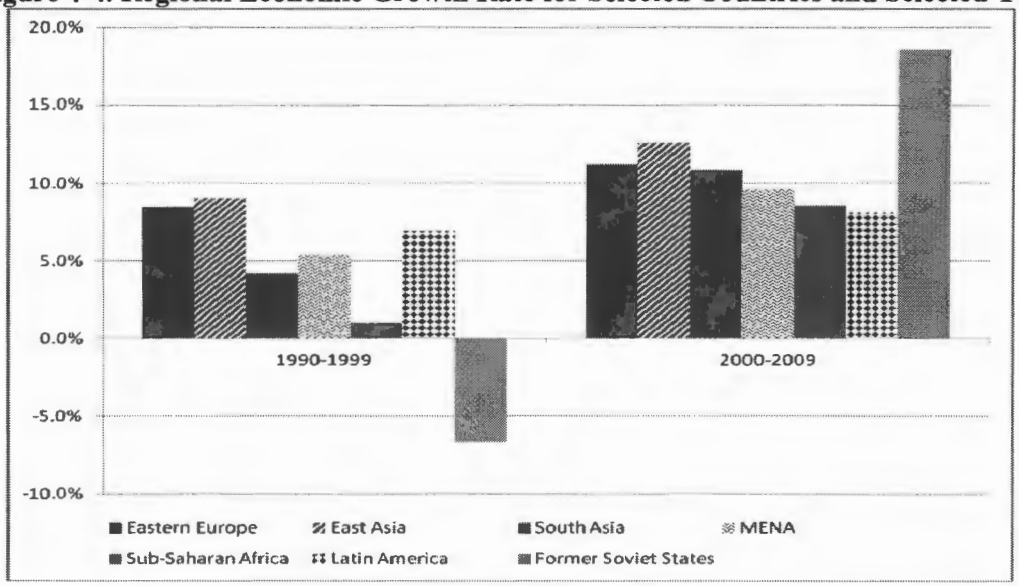
To have a sense of the size of the economies in our sample and their evolution over this period, Figure 4.3 shows the current values of GDP and its trend for each of the seven regions. It is worth mentioning that the values of regional GDP do not represent the total values of GDPs for those regions, as all the countries in the regions are not included in the sample set and there are differences among regions in terms of number of selected countries. However, the reported values may give us an acceptable basis for regional comparisons.

Figure 4-3. Regional GDPs for selected countries (billions US$)



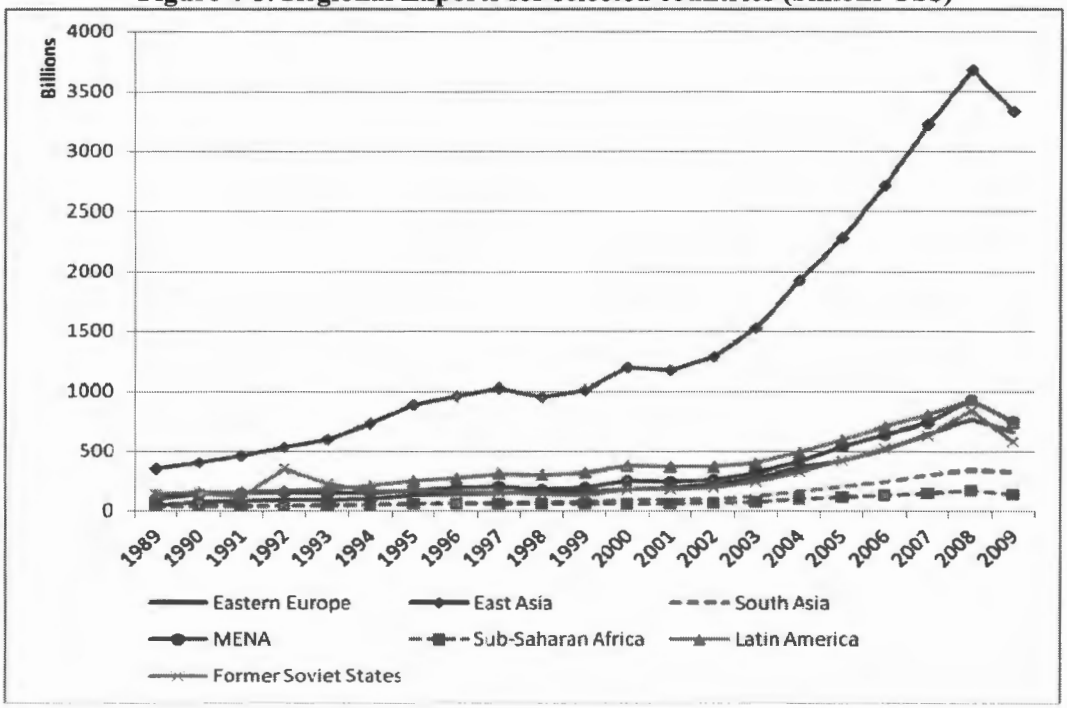
Comparing the rates of economic growth across the regions provides a more focused examination of the regions' dynamic performance. Figure 4-4 illustrates the growth rates of regions (based on the countries in the sample) over 20 years for the selected periods of 1990-1999 and 2000-2009.

Figure 4-4. Regional Economic Growth Rate for Selected Countries and Selected Years



The trend of exports for each region is illustrated in Figure 4-5. As it is shown in this figure, East Asia is clearly the dominant region in terms of exports volume. This region has been ranked first for entire period of the study. Furthermore, the growth rate of exports in East Asia is higher than any other region in the 2000s. Four regions including Eastern Europe, MENA, Latin America and Former Soviet States, follow almost the same pattern; they all have an increasing trend which is adversely affected by the recent global recession. Although they have a growing trend, the exports of South Asia and Sub-Saharan Africa are considerably less than other regions.

Figure 4-5. Regional Exports for selected countries (billions US$)



Estimation Results

As mentioned in the previous sections, I estimate the growth rate specification for the entire sample, hereto referred to as the overall (global) model (M), and for each of the seven regions of the world, using the sub-sample of countries from each region. The latter are referred to as the regional models (labeled as M1 to M7). The first step of the estimation process was the overall model estimation. All the estimations were conducted with both fixed and random effects. Table 4-1 shows the results with for the overall model (M) with both fixed and random effects.

The Overall Model (M)

I ran two different estimations for the overall sample; one without regional dummy variables and one with regional dummy variables. Both results are reported in Table 4-1. Incorporating regional dummy variables into the estimation had little effect on the coefficients of the other regressions.

The results clearly indicate that the domestic sources of capital (represented by the DINV) are the most influential factor on economic growth, which is statistically significant at .01. Among the external capital flows, only FDI is statistically significant. However, FDI appears with an unexpected negative sign. The other variable that contributes to economic growth is the rate of growth of exports (EXP). Neither employment ratio (EMP) nor education (EDU) appear to have any impact on the growth rate of GDP. Finally economic growth rate is found to have a positive statistically significant time trend, with a coefficient comparable to DINV.

Table 4-1. The Estimation Results For The Overall Model

Fixed Effect				*Random Effect*	
a)Estimation without regional dummy variables		*b) Estimation with regional dummy variables*			
Variable	**Coefficient**	**Variable**	**Coefficient**	**Variable**	**Coefficient**
Constant	-2.451 (1.439)*	D1	-2.879 (2.222)	Constant	-2.862 (1.163)
DINV	0.399 (0.029)***	D2	-1.583 (1.377)	DINV	0.403 (0.020)***
FDI	-0.002 (0.001)***	D3	-3.258 (1.783)*	FDI	-0.001 (0.001)**
DEBT	0.000 (0.000)	D4	-2.320 (1.573)	DEBT	0.000 (0.000)
ODA	0.000 (0.002)	D5	-4.201 (1.787)**	ODA	0.000 (0.002)
REM	0.000 (0.000)	D6	-3.570 (1.477)**	REM	0.000 (0.000)
EXP	0.296 (0.037)***	D7	-2.016 (1.765)	EXP	0.303 (0.028)***
EMP	-0.431 (0.391)	DINV	0.399 (0.026)***	EMP	-0.470 (0.418)
EDU	0.189 (0.184)	FDI	-0.001 (0.001)***	EDU	0.251 (0.154)
T	0.313 (0.109)***	DEBT	0.000 (0.000)	T	0.328 (0.087)***
		ODA	0.000 (0.002)		
		REM	0.000 (0.000)*		
		EXP	0.294 (0.034)***		
		EMP	-0.366 (0.358)		
		EDU	0.263 (0.166)		
		T	0.347 (0.102)***		
R^2	0.6799	R^2	0.6448	R^2	0.6389
Adj-R^2	0.6346	Adj-R^2	0.6350	Adj-R^2	0.6329
n	557	n	557	n	557

Note:

- Figures in parentheses are standard errors.
- ***, **, * indicates statistical significance at 1%, 5% and 10% respectively (two-sided tested).
- The time lagged values of the variables, up to three years, were used in the estimations. However, as they were not significant, the results are not reported.

As can be seen from Table 4.1, the results for fixed and random effects are similar. The formal Hausman tests as provided in Table 4-2 support the result that fixed effect specifications is appropriate. Therefore in the following discussion, I focus only on fixed effect results.

From the seven regional dummy variables, only two (D5 and D6) are statistically significant, which correspond to Sub-Saharan Africa and Latin America regions, respectively. The negative signs of these variables indicate lower GDP growth rates for these regions.

The differences between countries might be influencing the results for the overall models. In fact, some structural factors might be affecting the effectiveness of financial factors which somehow affect the results of estimations. This might happen when all developing countries are considered as a homogenous group forming the entire sample. Therefore, to differentiae among the countries, I divided countries into their geographical regions which is a reasonably acceptable way to have the same group of countries with more or less similar structural barriers and development policies and plans to capture these structural effects. Ideally, one could consider country-specific effects for greater differentiation. However, given the large number of countries relative to the number of observations in the sample, country-specific effects could not be estimated. The fixed effect estimation results for each of the seven regions (Models M1-M7) are reported in Table 4-3. The results for each of regions are discussed below.

Table 4-2. Hausman Specification Tests			
Test cross-section random effects			
	χ^2 Statistic	χ^2 d.f.	P-value
M (The Overall Model)	3.866	9	0.92
M1 (Eastern Europe)	6.359	8	0.6071
M2 (East Asia)			
M3 (South Asia)			
M4 (MENA)	4.927	8	0.7654
M5 (Sub-Saharan Africa)	7.802	9	0.5543
M6 (Latin America)	7.833	9	0.5511
M7 (Former Soviet States)	8.199	9	0.5142
Note: As Random effect estimation requires number of cross sections > number of coefficients for between estimators for estimate of Random effect innovation variance, and the number of cross section in two regions (East Asia and South Asia) was less than the number of coefficients, the random effect estimations for M2 (East Asia) and M3 (South Asia) were not possible. .			

Eastern Europe Region (M1)

As shown in the second column of Table 4-3, two variables have statistically significant effects on growth for this region. The domestic capital sources (DINV) with the coefficient of 0.425 (also significant at .01) is the most effective financial factor. However, it is not the most influential factor among all other variables as the exports with the coefficient of 0.502 (significant at .01) affects economic growth more. All other capital sources have a negative coefficient, albeit none are significant. The lack of sufficient data for the variable of foreign loans (debt) for this group of countries forced the removal of this variable from the model. None of other growth determinants are significant either. Also, no time trend exists for economic growth in this region.

Table 4-3. The Regional Estimations Results – Fixed Effects

	M1	*M2*	*M3*	*M4*	*M5*	*M6*	*M7*
Variable	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*	*Coefficient*
Constant	0.795	-1.589	2.510	0.973	-5.282	0.820	-12.905
	(4.455)	(2.603)	(2.528)	(2.471)	(4.248)	(1.895)	(5.438)**
DINV	0.425	0.463	0.611	0.589	0.407	0.495	0.132
	(0.097)***	(0.076)***	(0.067)***	(0.058)***	(0.080)***	(0.034)***	(0.044)***
FDI	-0.007	-0.009	0.000	-0.001	-0.002	0.002	-0.003
	(0.009)	(0.004)**	(0.001)	(0.001)	(0.001)**	(0.002)	(0.005)
DEBT		-0.002	0.004	-0.002	0.001	0.000	-0.001
		(0.002)	(0.003)	(0.002)	(0.002)	(0.000)	(0.001)
ODA	-0.020	-0.001	-0.017	-0.002	-0.021	0.004	0.032
	(0.018)	(0.003)	(0.025)	(0.002)	(0.015)	(0.005)	(0.022)
REM	-0.001	0.016	0.001	-0.010	0.001	0.000	0.003
	(0.004)	(0.022)	(0.001)	(0.044)	(0.005)	(0.000)	(0.005)
EXP	0.502	0.261	-0.030	0.393	0.389	0.148	0.295
	(0.125)***	(0.113)**	(0.078)	(0.082)***	(0.098)***	(0.054)***	(0.067)***
EMP	-0.425	-0.271	-1.397	-1.524	1.462	-0.522	0.427
	(0.714)	(0.984)	(1.503)	(0.948)	(2.348)	(0.599)	(1.029)
EDU	0.096	0.487	0.043	-0.044	0.249	-0.241	0.241
	(0.257)	(0.303)	(0.240)	(0.416)	(0.664)	(0.263)	(0.340)
T	-0.117	0.301	-0.009	-0.151	0.394	0.100	1.142
	(0.366)	(0.157)*	(0.219)	(0.210)	(0.333)	(0.136)	(0.482)**
DINV(-1)							0.112
							(0.044)**
ODA(-1)			-0.055				
			(0.026)**				
REM(-1)							0.003
							(0.001)**
EXP(-1)							0.156
							(0.061)**
R^2	0.7450	0.7343	0.8605	0.7860	0.6600	0.7888	0.7917
Adj-R^2	0.6662	0.6679	0.7990	0.7282	0.5701	0.7518	0.7254
N	73	66	50	81	111	135	88

Note:

- Due to the lack of sufficient data for the variable of foreign debt (loans), the "debt" factor was dropped in the case of Eastern Europe
- The time lagged values of the variables, up to three years, were used in the estimations. However, only the significant results are reported.
- Negative numbers in parentheses besides the variables represent the significant time lag of the variables
- Figures in parentheses are standard errors.
- ***, **, * indicates statistical significance at 1%, 5% and 10% respectively (two-sided tested).

East Asia Region (M2)

The results for this region are reported in the third column of Table 4-3. In this case, the variable of domestic financial sources (DINV) is the most effective factor promoting economic growth. The calculated coefficient of the variable (0.463 significant at .01) is the greatest coefficient among others. The variable of exports also affects growth in a positive direction (0.261 significant at .05). FDI with the coefficient of -0.009 (significant at .05) is negatively associated with economic growth, thought its magnitude is too small. As in the model for Eastern Europe, education and employment ratio are not statistically significant. There is a marginally significant time trend for this region, however.

South Asia Region (M3)

The estimation results for South Asia are given in the fourth column of Table 4-3. The results indicate that domestic capital sources (DINV) is positively and strongly affecting growth for this region as well. With a coefficient of 0.611 (significant at .01), it strongly drives economic growth. The other financial factor that is significantly associated with economic growth is foreign aid (ODA) with one year lag. This variable, however, is negatively related to growth. Interestingly, exports do not significantly affect economic growth for this region.

Middle East and North Africa (MENA) (M4)

The column five of Table 4-3 shows the estimation results for the Middle East and North Africa region. Domestic capital sources (DINV) also plays the major role in

promoting economic growth. The magnitude of coefficient (0.589 significant at .01) implies the importance of domestic financial sources in economic growth of the countries in this region. The variable of exports with the coefficient of 0.393 significant at .01 is another important factor for the growth in this region. Although the coefficients of all other financial factors appear negative, none of them are significant, nor are education, employment and the time trend.

Sub-Saharan Africa (M5)

The results for this region are reported in the sixth column of Table 4-3. Two factors have a major role in explaining the variation of economic growth in this case: domestic financial sources (DINV) with the coefficient of 0.407 and exports with the coefficient of 0.389 (both are significant at .01). Similar to the overall model (M), FDI is negatively related to economic growth. However, the magnitude of the effect is fairly small. The other variables are not statistically significant.

Latin America (M6)

The estimation results for Latin America are given in column seven of Table 4-3. Similar to the regions of Eastern Europe and MENA, in this region, the only two effective factors are domestic capital sources (DINV) and the exports with the coefficients of 0.495 and 0.148, respectively. Both of the coefficients are significant at .01. It is clear that domestic capital sources are the most influential determinant of economic growth in this region. All other financial factors despite of having positive coefficient signs are not significant; nor are the other variables.

Former Soviet States (M7)

The last region in the regional analysis is the region of the former soviet states. The results for this region are reported in the last column of Table 4-3. Several factors explain economic growth in this region. Among financial factors, the coincident variable of domestic financial sources (with coefficient of 0.132 significant at .01) and its one year lag (with coefficient of 0.112) is significant at .05. One year lag of the variable of remittances (with the coefficient of 0.003 significant at .05) is also positively affecting economic growth. However, the most influential factor effective on economic growth is exports. The coincide variable of exports with the coefficient of 0.295 (significant at .01) and its one year lag variable (with the coefficient of 0.156 significant at .05) strongly affect economic growth. Moreover, the time trend variable (with the coefficient of 1.142 significant at .05) has also a positive relationship with economic growth. The constant term is also significant in this region which it is evident as most of the former soviet states experience economic collapse in the beginning of the 1990s. As in other regions, neither education nor employment are statistically significant.

The regional estimations results with random effects are reported in Table 4-4. The regional estimations results with random effects are very similar to those with fixed effects. Domestic capital sources (DINV) are the dominant factor positively affecting on economic growth. The variable of exports has also positive effects on growth. Other variables, however, are not significant. Contrary to the results of the overall models, no significant time trend exists for economic growth in any of regions except for the region of Former Soviet States (M7). Moreover, as number of cross section in two regions (East

Asia and South Asia) was less than the number of coefficients, the random effect estimations for M2 (East Asia) and M3 (South Asia) were not possible. Yet, as the results of Hausman test in Table 4-2 shows, the results of random effects are not appropriate.

Table 4-4. The Regional Estimations Results – Random Effects

Variable	*M1*	*M2*	*M3*	*M4*	*M5*	*M6*	*M7*
Constant	1.928			-0.417	-7.490	-0.272	-19.08
	(3.416)			(2.027)	(4.129)*	(2.030)	(3.876)***
DINV	0.412			0.484	0.391	0.502	0.15
	(0.067)***			(0.044)***	(0.064)***	(0.035)***	(0.039)***
FDI	-0.005			-0.001	-0.002	0.002	0.00
	(0.007)			(0.001)	(0.001)*	(0.003)	(0.005)
DEBT				0.000	0.001	0.000	0.00
				(0.002)	(0.001)	(0.000)	(0.001)
ODA	-0.014			0.000	-0.021	0.006	0.03
	(0.015)			(0.003)	(0.020)	(0.005)	(0.022)
REM	0.001			0.030	0.005	0.000	0.00
	(0.004)			(0.035)	(0.005)	(0.000)	(0.001)*
EXP	0.436			0.185	0.369	0.158	0.27
	(0.101)***			(0.052)***	(0.100)***	(0.052)***	(0.048)***
EMP	-0.343			-0.560	0.507	-0.198	0.65
	(0.751)			(0.730)	(2.992)	(0.609)	(1.013)
EDU	0.022				0.515	0.042	0.13
	(0.265)				(0.737)	(0.266)	(0.269)
T	-0.137			0.195	0.546	0.123	1.94
	(0.274)			(0.169)	(0.324)*	(0.143)	(0.292)***
R^2	0.7149			0.6246	0.5843	0.7709	0.7339
Adj-R^2	0.6793			0.5994	0.5473	0.7544	0.7051
N	73			128	111	135	93

Note:

- Due to the lack of sufficient data for the variable of foreign debt (loans), the "debt" factor was dropped in the case of Eastern Europe
- In order to have the number of cross sections > number of coefficients, this variables EDU was dropped from the estimation in the case of the estimation of M4 (the region of MENA)
- Random effect estimation requires number of cross sections > number of coefficients for estimators to estimate Random effect innovation variance. The number of cross section in two regions (East Asia and South Asia) were less than the number of coefficients, the random effect estimations for M2 (East Asia) and M3 (South Asia) were not possible.
- Figures in parentheses are standard errors.
- ***, **, * indicates statistical significance at 1%, 5% and 10% respectively (two-sided tested).

Income Level Classification

In order to find any pattern associated with the level of income of developing countries, the sample countries were classified into three different income groups; Low income, Lower middle income, and Upper-middle-income economies. The fixed effect estimation results for each of the three income groups are given in Table 4-5.

Table 4-5. The Estimations Results for Different Income Groups

Variable	*Low-income economies*	*Lower-middle-income economies*	*Upper-middle-income economies*
Constant	-8.009 (4.665)*	-0.724 (2.250)	-1.746 (1.651)
DINV	0.359 (0.061)***	0.446 (0.085)***	0.421 (0.035)***
FDI	0.000 (0.001)	-0.002 (0.001)**	-0.002 (0.002)
DEBT	0.001 (0.003)	0.000 (0.000)	-0.001 (0.001)
ODA	-0.022 (0.047)	-0.002 (0.003)	0.001 (0.002)
REM	0.001 (0.002)	-0.004 (0.009)	0.000 (0.000)
EXP	0.213 (0.073)***	0.226 (0.074)***	0.351 (0.060)***
EMP	-2.893 (2.641)	0.218 (0.769)	-0.643 (0.453)
EDU	0.102 (0.583)	0.166 (0.270)	0.151 (0.279)
T	0.694 (0.369)*	0.282 (0.154)*	0.198 (0.118)*
R^2	0.6186	0.6730	0.7246
Adj-R^2	0.5221	0.6090	0.6839
n	105	172	280

Note:
- Figures in parentheses are standard errors.
- ***, **, * indicates statistical significance at 1%, 5% and 10% respectively (two-sided tested).

The results show a similar pattern to that of the regional classification. Similar to the most of the regional estimations, the two strong factors are domestic capital sources

(DINV) and the exports (both factors are positive and significant at .01 in all three groups). Yet, FDI with the coefficient of -0.002 (significant at .05) is negatively associated with economic growth for Lower-middle-income group, thought its magnitude is too small.

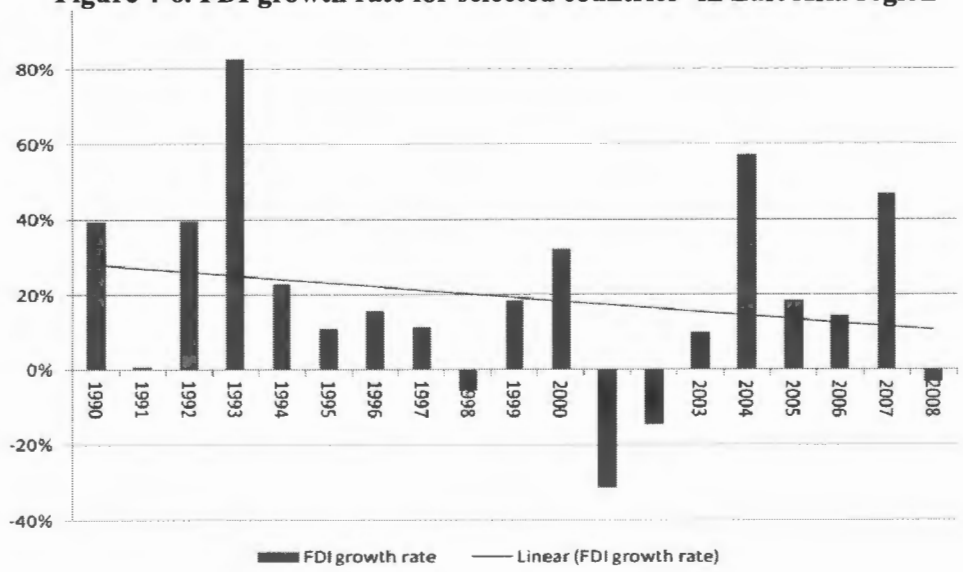
Discussion

The estimation results from the overall model (M) and regional models (M1-M7) show clearly that domestic financial sources have a consistent positive impact on economic growth which is highly statistically significant (all at .01). Moreover, in most cases, it has the greatest coefficient in the estimations which can be interpreted as having the greatest impact on economic growth. These results support the findings in the literature, such as the studies of Papanek (1973), Stoneman (1975), Mosley (1980), Dowling and Hiemenz (1983), Firebaugh (1992), Most and Van den Berg (1996), Baharumshah and Thanoon (2006), and Bhandari (2007).

Regarding other financial factors, the various estimations provide mixed results. For the overall model (M), FDI appears negatively associated with economic growth. Although few similar findings exist in the literature (Stoneman (1975) and Dutt (1977)), most of studies have not found negative relationship between FDI and economic growth. Such unexpected finding, however, is not confirmed for most regional models. The exceptions are East Asia (M2) and Sub-Saharan Africa (M5), where both show a significant negative coefficient for FDI. Since the East Asia is by far the dominant destination of FDI flows in the last two decades and it remarkably influences the overall sample in this regard, I probe this case in more detail.

The variable of exports is also found positively related to economic growth. Most of the studies in the literature which have considered this factor in their models, have found the similar results, for example, Rana and Dowling (1988) and Burke and Ahmadi-Esfahani (2006).

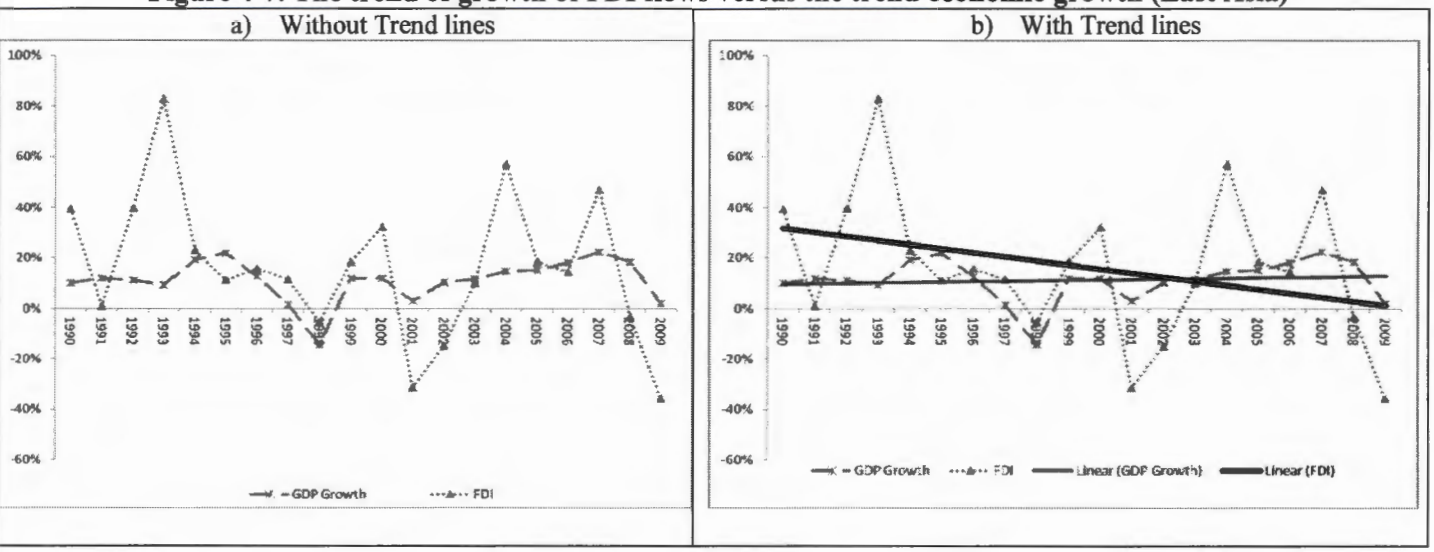
Figure 4-6. FDI growth rate for selected countries[7] in East Asia region



As it is shown in Figure 4-6, the overall trend of the growth rate of FDI flows into East Asia region has been decreasing in the last two decades, though it does not imply that the amount of FDI flows into this region has the same trend. In other words, the FDI flows to East Asia have decreasingly increased over the last two decades. Figure 4-7 displays the trend of growth rate of FDI inflows versus the trend economic growth in the region of East Asia. As it is shown in Figure 4-7, although the FDI inflows has many ups and downs, its overall trend is descending, whereas the overall trend of economic growth is slightly increasing over the last two decades.

[7] China, Hong Kong, Indonesia, Korea, Rep., Malaysia, Philippines, Singapore, Thailand, Vietnam

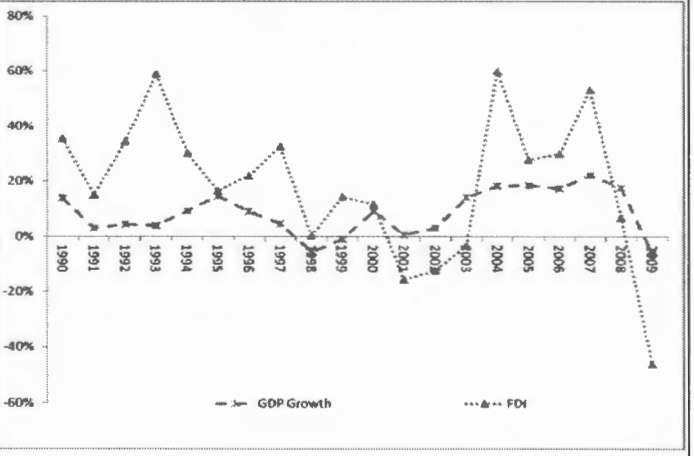
Figure 4-7. The trend of growth of FDI flows versus the trend economic growth (East Asia)



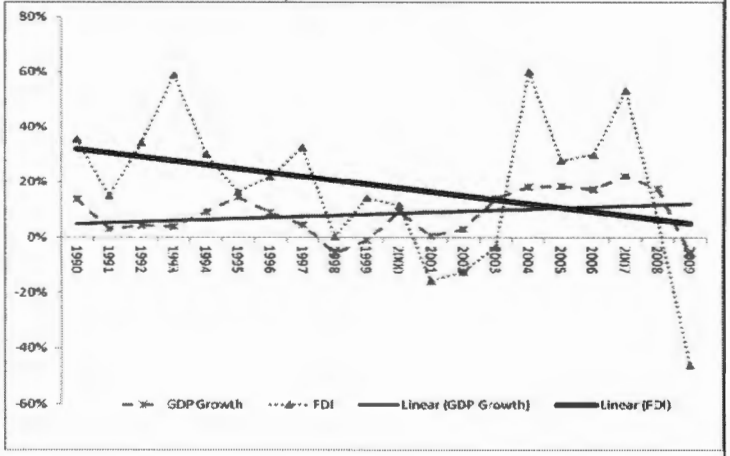
The same interpretation can be applied to the overall model (M). Figure 4-8 shows the trends of growth rate of FDI inflows as well as the trend of economic growth for the overall sample of this study. Economic growth is slightly growing over time while the rate of growth of FDI inflows is decreasing in the same period of time. Therefore the signs and coefficients of FDI in the models should be interpreted very cautiously. In other words, the declining trend of the growth rate of FDI and increasing trend of economic growth should not be interpreted as a cause-effect relationship. If the growth rate of FDI inflows, for any reason, has been decreased in the recent years, it does not imply that FDI inflows negatively impact economic growth. It might be inferred that the accumulated amount of FDI inflows, especially in East Asia, has been driving exports, and then exports has affected economic growth, and even though the growth rate of FDI inflows has been declined, the economic growth continues to grow more.

Figure 4-8. The trend of growth of FDI flows versus the trend economic growth (Overall sample)

a) Without Trend line



b) With Trend line



The variable of foreign debt (loans) has never been significant in any of the estimations. Same could be said about ODA and remittances. The only exceptions are lagged ODA for South Asia (though not of the expected sign) and remittances for the Former Soviet States.

The variable of exports in almost all estimations shows a statistically significant positive impact on economic growth. One would expect that education and employment contribute to economic growth. However, nowhere in the regions or in the overall model these variable appear significant.

Chapter 5

Conclusions

"Convictions are more dangerous enemies of truth than lies."

Friedrich Nietzsche

Conclusion

In the present chapter, I am going to draw conclusions based on the results discussed previously. However, a brief review of the research questions will be helpful.

As stated in Chapter one, the main research question was whether or not the source of capital matters for economic growth. The results of this study as reported and discussed in Chapter four indicate that source of finance does matter for economic growth, at least when comparing domestic sources versus foreign ones. The estimation results for the overall model and regional models show that domestic sources have positive impacts on economic growth which are statistically highly significant. This is a consistent result for the overall and regional models.

The second question raised in Chapter one was which source of finance has greater impact on economic growth. As mentioned above, the findings demonstrate that domestic sources have a greater positive impact on economic growth than any kind of foreign sources, no matter what region is taken into account.

Finally the third question was whether capital financing is region specific or income-level specific. The regional results do not show any region-specific pattern of association among the capital flows and economic growth. Similarly, no income-level specific patterns are observed among the low, lower-middle and upper-middle income groups.

The major conclusion of this study is that despite of all discussions regarding the diminishing role of capital in economic growth, it is still one of most important factors (if not the most important one) in explaining variations in economic growth. This fact is very clear either in the trend of capital flows or in the results of estimations. Capital is an

essential means of promoting and accelerating economic growth and it is a necessary (but not necessarily sufficient) condition for growth and development.

The other conclusion is that financing capital requirement is not region-specific. Although there might be some differences between countries in terms of their development levels, structural factors, absorptive capacity, etc, these differences cannot be generalized to the regions.

Limitations of the study

The study suffers from a number of limitations. Although this study attempted to capture the country-specific structural factors by grouping countries into regions, the regional categorization is not the best method to solve this problem. On the other hand, the high number of selected countries prevented the use of country-specific dummy variables (it would have sharply decreased the degrees of freedom) and therefore regional dummy variables incorporated to the model to capture heterogeneity across countries. There was also some limitation in the case of including country-specific time trend into the estimations. It would have reduced the degrees of freedom too. Foreign capital flows rarely showed any significant coefficients. The reason might be either the missing variables, misrepresentation of the variables, or the model misspecification. For example, in the case of education the indicator chosen as a proxy of it (Secondary school enrollment ratio) is not an ideal proxy to represent the human capital of an economy. However, it was one of the few indicators on education for which data was available for most of the countries.

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Appendix A

Table A -1. The List of Regions and Countries in Each Region	
Regions	***Countries***
Eastern Europe	Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia, Slovenia
East and South-East Asia	China, Hong Kong, Indonesia, Korea, Rep., Malaysia, Philippines, Singapore, Thailand, Vietnam
South Asia	Bangladesh, India, Myanmar, Nepal, Pakistan, Sri Lanka
Middle East and North Africa (MENA)	Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, Yemen Rep.
Sub-Saharan Africa	Angola, Benin, Cameroon, Chad, Dem. Rep. of Congo, Rep. of Congo, Cote d'Ivoire, Ghana, Guinea, Kenya, Mozambique, Niger, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe
Latin America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Panama, Paraguay, Peru, Uruguay, Venezuela
Former Soviet states	Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

Appendix B

The Trends of External Capital Flows to Various Regions.

Figure B -1. The trends of FDI toward regions (billions US$)

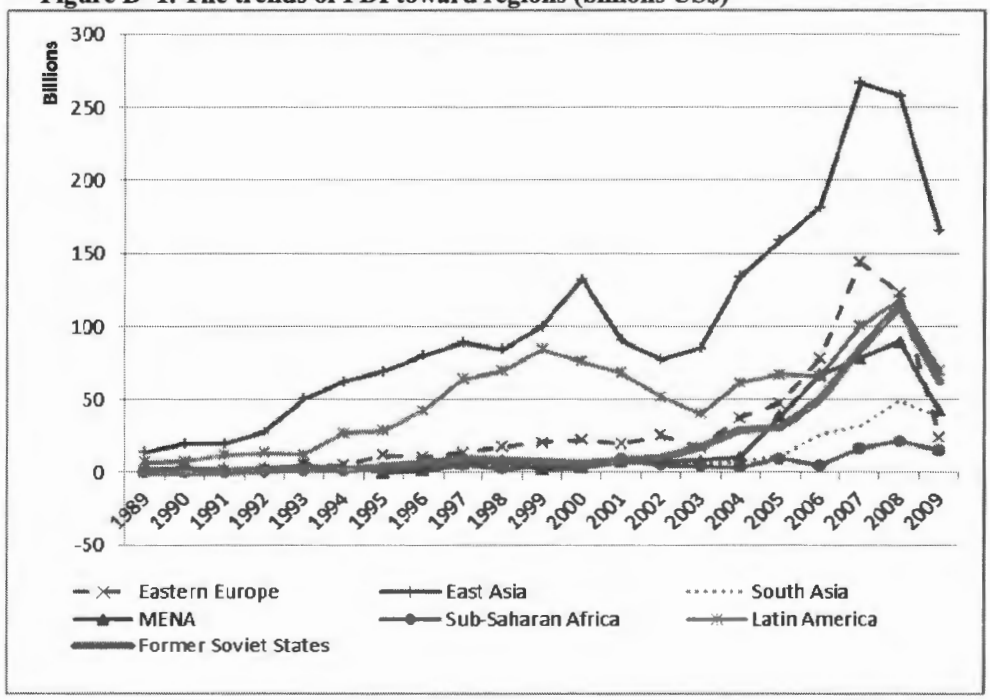

Figure B-2. The regional trends of external capital flows – Eastern Europe (billions US$)

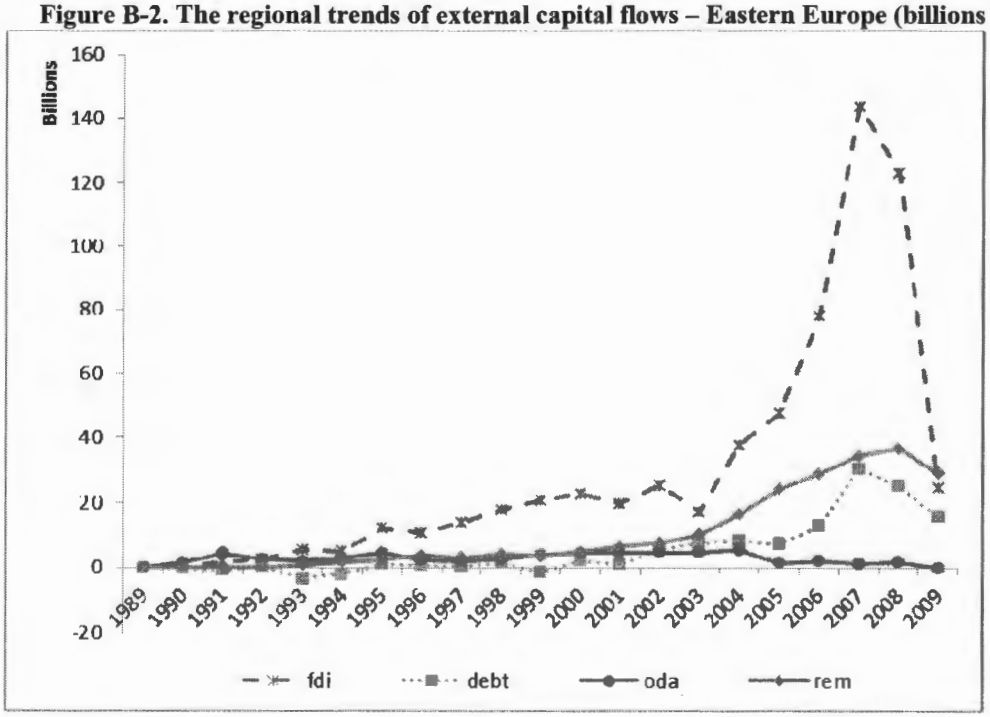

Figure B-3. The regional trends of external capital flows – East Asia (billions US$)

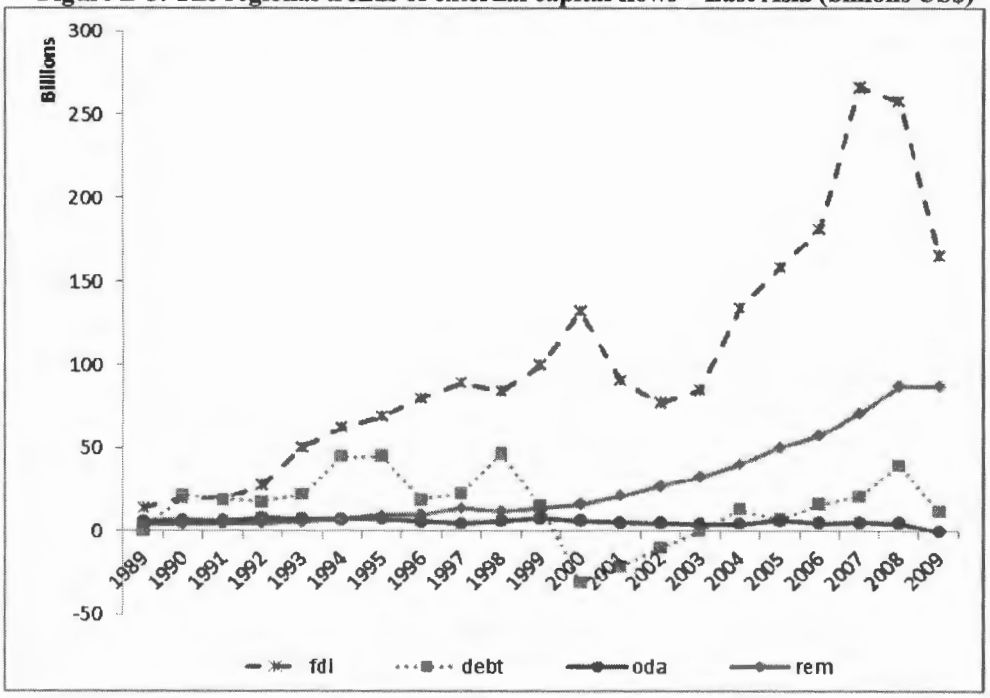

Figure B-4. The regional trends of external capital flows – South Asia (billions US$)

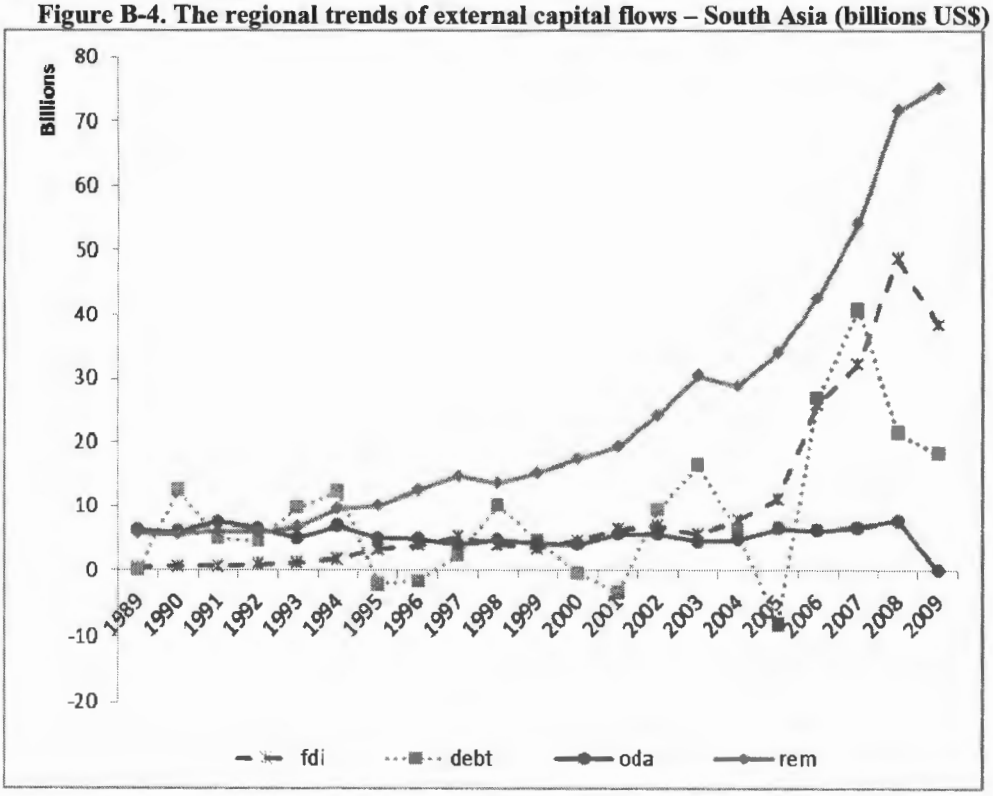

Figure B-5. The regional trends of external capital flows – MENA (billions US$)

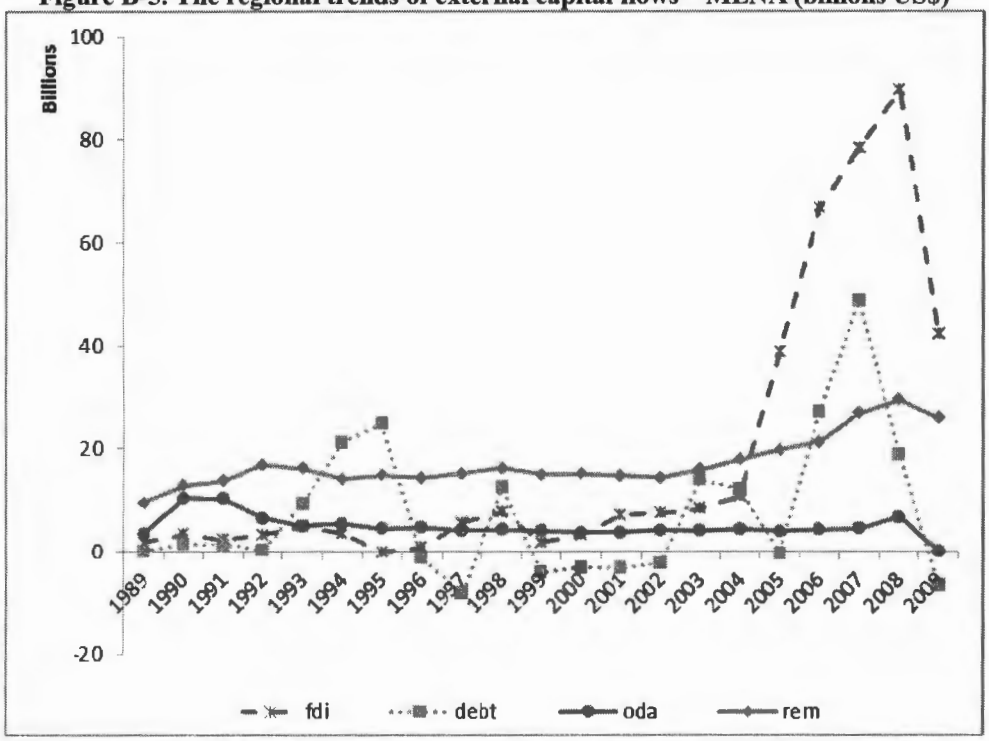

Figure B-6. The regional trends of external capital flows – Sub-Saharan Africa (billions US$)

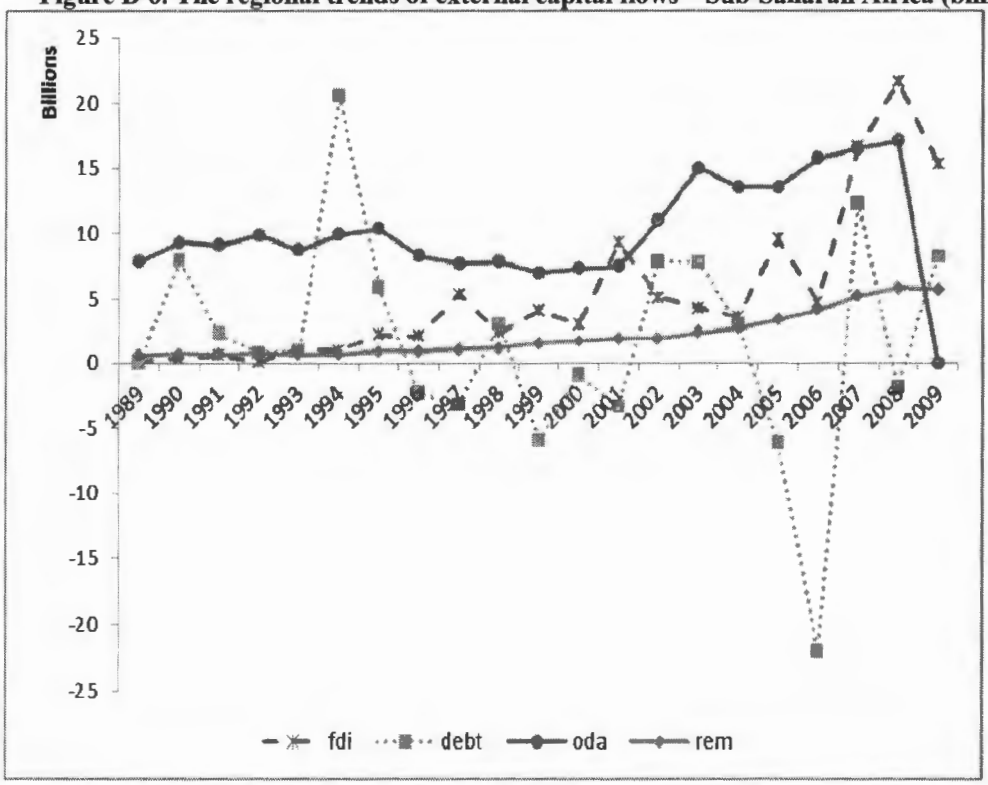

Figure B-7. The regional trends of external capital flows – Latin America (billions US$)

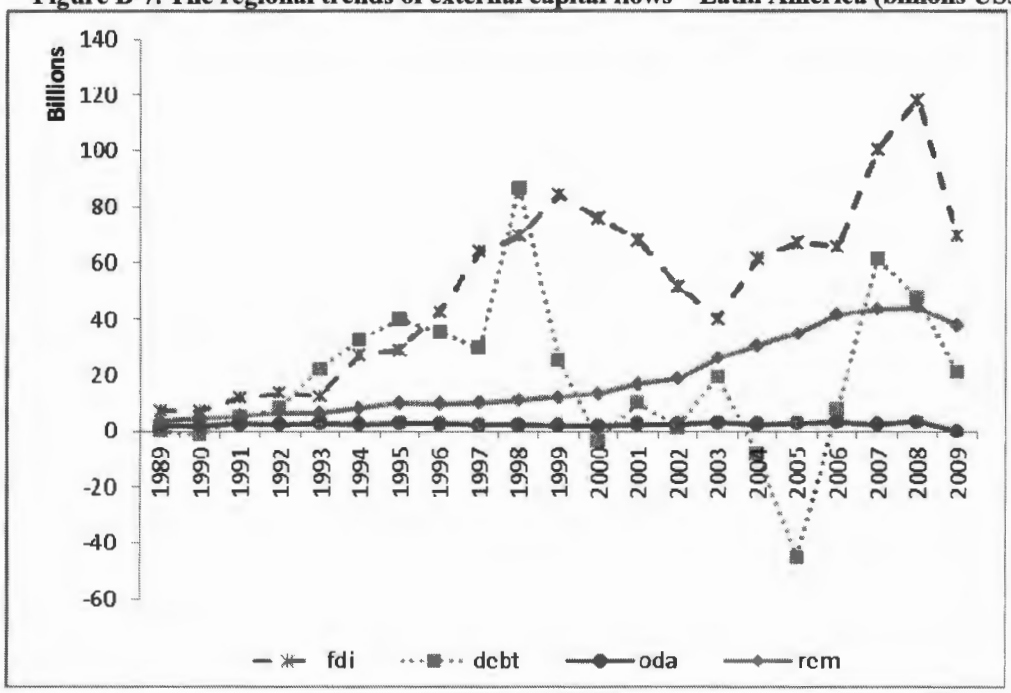

Figure B-8. The regional trends of external capital flows – Former Soviet States (billions US$)